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The diagnosis and treatment of primary dysmenorrhea

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Abstract

Primary dysmenorrhea is defined as pain in the pelvic area that occurs for no specific reason during menstrual cycle. Dysmenorrhea occurs in 50% to 90% of adolescent girls and women of reproductive age which makes it one of the most common causes of pelvic pain in women. The mechanism of this condition is overproduction of prostaglandins by the endometrium, causing uterine hypercontractility, thereby leading to uterine muscle ischemia, hypoxia and pain. Dysmenorrhea significantly reduces the quality of women life, often making it impossible to perform daily activities and, in addition, it may cause a mental stress that makes both professional and school life difficult. Despite this, females often consider these symptoms as a normal part of their menstrual cycle, which makes this disease underrated and untreated. Dysmenorrhea can be treated in a various ways such as non-pharmacological, pharmacological and surgical. However, women with a typical history of primary dysmenorrhea can commence empirical therapy without any additional tests. Hormonal contraception and nonsteroidal antiinflammatory drugs have proved to be effective in this treatment. However, if conventional treatment is contraindicated, alternative treatments such as topical heat, lifestyle modification, transcutaneous electrical nerve stimulation, dietary supplements, acupuncture, and acupressure may be used. Surgical treatment is possible, but it is used rarely and only in severe cases of treatment-resistant dysmenorrhea. However, it should be emphasized how important it is to exclude secondary causes of dysmenorrhea.

Keywords: primary dysmenorrhea, dysmenorrhea, menstruation

Introduction

Primary dysmenorrhea is defined as painful menstrual cramps of uterine origin in the absence of pelvic pathology [1][2]. This suprapubic pain begins

between a few hours before and a few hours after the commencement of the menstrual bleeding[1][3]. Primary dysmenorrhea is estimated to be present in 40–50% of young women. Severe forms are the reason of work or school absenteeism in 15% and the mild forms requiring no medication or occasional analgesics in about 30%. As a result dysmenorrhea significantly reduces the quality of women life, often making it impossible to perform daily activities and, in addition, it may cause a mental stress that makes both professional and school life difficult [1,4]. Its first manifestation commonly appears 6 to 12 months after menarche because it performs only during ovulatory cycles. The average duration of the pain is about 8 to 72 hours. The most severe pain is on the first two days of menstruation, which is associated with the increased release of prostaglandins during this time [5,6,7]. Prostaglandins impact on different tissues as well, which may cause many other ailments besides pain [5]. Females often consider these symptoms as a normal part of their menstrual cycle, which makes this disease underrated and untreated [4].

The purpose of this review is to describe current knowledge about the pathophysiology of primary dysmenorrhea, diagnosis of this disease and to discuss current treatment strategies.

Pathophysiology of primary dysmenorrhea

Primary dysmenorrhea appears to be the result of increased secretion and release of uterine prostanoid and possibly eicosanoids, which in turn induces hypercontractility of the myometrium. The contractions reduce uterine blood flow, leading to uterine muscle ischemia, and hypoxia, result of which is pain [1,2,8]. Similarity between symptoms of primary dysmenorrhea and prostaglandin-induced uterine contractility in labor or abortion can serve as a confirmation of this statement. In addition, prostaglandins were found in the menstrual fluid of women with primary dysmenorrhea and the use of cyclooxygenase (COX) inhibitors, which reduce prostaglandin synthesis, resulted in pain relief [1,9]. During ovulation progesterone levels stabilize cellular lysosomes, although at the end of the luteal phase those levels decline, resulting in lysosomes damage and phospholipase A₂(PLA₂) release. PLA₂ initiates the cyclooxygenase pathway with resultant prostanoid production. This clarifies the correlation between the onset of pain of dysmenorrhea and only ovulatory cycles [1,10]. Primary dysmenorrhea is not only the suprapubic pain,

but it is also associated with other symptoms caused by prostaglandins such as: nausea, vomiting, diarrhea, low back pain, migraines, fatigue, dizziness, insomnia and rarely even hyperthermia [5,6,7].

Diagnosis and treatment

Primary dysmenorrhea presents at the onset of ovulatory cycles, usually within 6-12 months after menarche. It was noted that its frequency decreases with increasing age. The evaluation of pain during menstruation should contain a clinical history and physical examination to exclude pelvic disease. This data should include menstrual history, pain characterization, current treatment, family history, sexual history, system review [3,6,8,11]. It is also worth paying attention to additional symptoms such as nausea, vomiting, bloating, and diarrhea [8].

Dysmenorrhea can be treated in a various ways such as non-pharmacological, pharmacological and surgical, with pharmacological treatment being the most effective. The most important goal of treatment is menstrual pain reduction.

Non-steroidal anti-inflammatory drugs (NSAIDs) are considered the first line treatment. They work by inhibiting the activity of cyclooxygenase (COX) enzymes which results in decreased prostaglandin production, decreased prostaglandin concentration in menstrual fluid, decreased uterine contractility, and menstrual volume.

Combined oral contraceptive (estrogen-progestin) is the second line of treatment. The aim of this medication is ovulation and endometrial growth suppression by causing a decrease in menstrual volume and prostaglandin secretion, with a subsequent decrease in intrauterine pressure and uterine contractility. Progestin-only method may be effective in treatment, as the progestin component is responsible for inducing endometrial atrophy, leading to pain relief, but it is not as studied as combined oral contraceptives. Subdermal implant with etonogestrel release as well as transdermal and vaginal contraceptives The use of subdermal implant with etonogestrel release, as well as transdermal and vaginal contraceptives, has not been well studied in primary dysmenorrhea [6,9,13].

Another treatment option are tocolytics, which block contractility so they could prevent uterine hypercontractility. However they are being investigated as potential drugs for the treatment of dysmenorrhea, so they are not used for it yet.

Vitamin E suppresses phospholipase A2 and COX activity, by that inhibiting prostaglandin production and prostacyclin action promotion, which results in vasodilatation and muscle relaxation and because of this it should be considered as a treatment option [1,6,14].

However, if conventional treatment is contraindicated, alternative treatments such as topical heat, lifestyle modification, transcutaneous electrical nerve stimulation, dietary supplements, acupuncture, and acupressure may be used [6,9,15]. Surgical treatment is possible, but it is used rarely and only in severe cases of treatment-resistant dysmenorrhea, requiring re-evaluation of the diagnosis and investigation of secondary causes. Surgical treatment includes Laparoscopic uterosacral nerve ablation (LUNA), Presacral neurectomy (PSN) and Hysterectomy [3,6,16]

Conclusions

Primary dysmenorrhea is one of the most common disease in menstruating woman. The painful time in the month due to this illness reduces the quality of women life, often making it impossible to perform daily activities. It may also cause a mental stress that makes both professional and school life difficult. The diagnosis is made on the basis of clinical history and physical examination. It should be also emphasised that females often consider symptoms of dysmenorrhea as a normal part of their menstrual cycle, which makes this disease underrated and untreated, therefore, clinicians should pay more attention to symptoms during menstruation in order to make an accurate diagnosis and introduce appropriate treatment as soon as possible.

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